

With the Compliments of
JOHN ROBINSON,
Salem, Mass.

From the BULLETIN OF THE ESSEX INSTITUTE, Vol. XVI, 1884.

BOTANY IN ESSEX COUNTY.

A PAPER

READ BEFORE THE ESSEX INSTITUTE, AT TOPSFIELD, JUNE 18, 1884;
THE FIFTIETH ANNIVERSARY OF THE FORMATION OF THE
ESSEX COUNTY NATURAL HISTORY SOCIETY.

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THE PROGRESS OF BOTANY IN ESSEX COUNTY DURING THE
LAST HALF CENTURY, ESPECIALLY AS INFLUENCED
BY THE ESSEX COUNTY NATURAL HISTORY SOCIETY AND
THE ESSEX INSTITUTE. 1834-1884.

BY JOHN ROBINSON.

ONE of our older botanists has said that the careful study of the flora of a very limited region might well occupy the lifetime of any person, and that the result accomplished would contribute more information of real value to science than any general work the same individual would be likely to undertake successfully.

This sentiment applies to the institution as well as the individual. Too often we see the local scientific society striving, not to emulate the spirit, but actually imitating the work of state or national institutions, totally neglecting, all the while, the more important duty of first presenting to the public a complete exhibit of the natural products of the fields, the forests, and the waters of the immediate neighborhood, and of encouraging an earnest study on the part of the people, especially the younger, of the natural objects met in every-day life, with which it is safe to say few are at all well acquainted.

How many persons outside of a scientific class should we be likely to find who could, even to-day, readily and correctly give, in outline, the life-history of a single animal or plant? We find many persons who are familiar with the common field flowers, but how many of these could tell us a word of the grasses or sedges, or, give us even the common names of half the forest trees growing naturally in our own county of Essex? And yet, in the whole course of botanical investigation, there are no plants

so common as grasses or so conspicuous as the forest trees; there are none of more value considered economically and none of greater importance to the practical farmer and mechanic. Happily, however, it cannot be said that the Essex Institute has materially erred in this direction, as may be shown to-day, by the present excellent local herbarium originally begun by the Essex County Natural History Society and the numerous natural history field-clubs, children, so to speak, of the Essex Institute, successfully established in various parts of the county, whose members hold their meetings and collect and study the native plants and animals.

To consider the progress of botany in Essex County for half a century three points present themselves: (1) The condition of botanical knowledge now as compared with that of fifty years ago. (2) The progress made in fifty years' work here, as shown by the increase of libraries, public museums, private herbaria, etc. (3) The practical benefit and general knowledge bestowed upon the people of the county by such increased accurate knowledge of the subject and the facilities for obtaining it.

Prior to 1834, the young zoologist had little in the way of books or collections to aid his studies. Throughout the county but few students of animal life had been developed. No convenient text-book had then been written applicable to this region, and many of the common forms, among the lower animals, had not even been described. The expense and difficulty of preserving specimens prevented the formation of private collections in many departments. In this part of the country, the museum of the East India Marine Society had alone attained any considerable size, and that collection was only open to the public as a special favor and contained but little in the way of specimens illustrating local natural history.

The railroads had not been built, and stage communication was so slow and expensive that the young student could not run to Boston or Cambridge of a holiday to consult libraries and collections even had they existed, as now, in those places.

With the botanist, however, it was somewhat different. Although the life-histories of plants were little known, and the theory of natural selection and evolution from lower forms was comparatively unheard of, and species were more considered than morphological relations; yet, in Dr. Jacob Bigelow's "*Florula Bostoniensis*," first printed in 1814, the second and enlarged edition of which had appeared in 1826, the young botanist had the golden key which should introduce him to an intimate acquaintance with nearly every flower and tree his path might cross, in any ramble, hereabouts, and through this acquaintance with their names and natures lead him to the closer study of their structure and morphology. To those of us who are only familiar with the study of botany to-day it is difficult to realize the importance of Dr. Bigelow's little volume, or the labor and study expended in its preparation. Begun as a sensible recreation from his arduous professional labors, it became the standard for all botanists in this part of the country, and, for more than a third of a century held the ground undisputed, until the larger and more elaborate works of Dr. Asa Gray superseded it.

The study of botany in Essex County, we may say in New England, properly dates from the time of Rev. Manasseh Cutler at the close of the last century. Early writers as Francis Higginson, John Josselyn, William Wood, John Winthrop and others refer to the native fruits and flowers. Josselyn published the well known "*New England Rarities Discovered*," an edition of which

has been prepared in recent years with valuable notes by Professor Tuckerman, and Higginson in a letter written from Salem in 1629-30 (Mass. Hist. Coll., Vol. I, p. 121) speaks of the "Flowering Mulberry," or Raspberry, and "Chervil," or Sweet Cicely, as growing near Salem in places, where certainly, until a very few years, these interesting historical plants still flourished. None of these writers can, however, be considered as Essex County botanists, and it is not until the close of the American Revolution that we find any serious or scientific study of the plants of the county. Manasseh Cutler of Hamilton, after his varied services as revolutionary chaplain, lawyer, pastor, doctor, reformer and pioneer, found time to prepare in 1783-4, as the title of his paper, says: "An account of some of the vegetable productions growing in this part of America, botanically arranged." This was published in the first volume of the "Memoirs of the American Academy of Arts and Sciences" which was printed in 1785, where some three hundred and fifty species of flowering plants were described and several important scientific points suggested which have since been adopted in botanical treatises. It was his intention to extend this work, and several manuscript volumes are now in existence prepared toward this end. Dr. Cutler's paper bears the date of presentation Jan. 26, 1784, and, therefore, we are not only celebrating to-day the semi-centennial anniversary of the first organization formed in Essex Country for the study of botany and kindred subjects, but the full centennial anniversary of the presentation of the first work upon the flora of Essex County by the first Essex County botanist.

Following Cutler came Drs. George Osgood and Andrew Nichols: the former contributed notes for Bigelow's "Florula Bostoniensis," and the latter delivered, in 1816,

a series of lectures on botany, the first of such given in this part of the country. Dr. Nichols was later one of the founders of the Essex County Natural History Society and its president, and thus has had an important influence upon local botanical work. In 1823, two young men, both destined to be long remembered on account of their contributions to botanical knowledge, began their work in Essex County. These were William Oakes of Danvers, later of Ipswich, and Charles Pickering, then spending much of his time at the homestead of his grandfather Col. Timothy Pickering at Wenham.

Oakes, disgusted with the law, his chosen profession, became the first critical botanist of the region, and at this time converted Dr. Pickering from conchology, a study he had first chosen, to botany.

Oakes botanized with Pickering extensively in Essex County, particularly in the Great Swamp, Wenham, a region then almost in its pristine wildness. Oakes afterwards prepared a list of Vermont plants for Thompson's history of that state, and had in contemplation a work on the plants of New England, which, owing to the appearance of Beck's Botany, was never completed. His most elaborate work was a folio volume on White Mountain scenery illustrated by Sprague, which, however, was not published until after his death in 1848. Oakes was impulsive and generous, and thoroughly in earnest in his favorite study. Like many men of note he was but little appreciated while living, yet no monument could have been erected to make his memory more cherished and his labors more respected than that which he left behind: an extensive collection of beautifully prepared botanical specimens determined with faultless accuracy, a portion of which formed the nucleus of the present county botanical cabinet now in the hands of the Peabody Academy of Science in Salem.

Dr. Pickering, in 1838, joined the Wilkes Exploring Expedition, of which he had been appointed the naturalist, and from that time until his death in 1881, his entire life was devoted to important works on zoology and botany.

We thus find in 1834, at the time of the foundation of the Essex County Natural History Society, a strong impetus had been given to the study of botany, beginning at Cutler's time and continuing directly to this date, through those who had been the disciples of Cutler himself, and that, developed at the same time, through a different channel, however, Bigelow's Botany had reached its second and enlarged condition.

For the systematic student, therefore, the path was made easy. In the departments of vegetable physiology the works of the older authors were accessible to those who could cope with the Latin, in which language they were chiefly written. Sprengel, the forerunner of Darwin, had, forty years before, published his work on the fertilization of flowers, which, however, was but little known; Andrew Knight had followed in 1800; Hale's experiments with the sunflowers were published and pictured, and the Jussieus, Schacht and Schleiden had swelled the writings on these and kindred subjects.

It is not to be wondered, therefore, at the first meetings of the new society, and later at those of the Essex Institute, that the subject of botany should have absorbed a large share of the time in its consideration, and that horticulture, its close kin, should develop in our midst even to becoming the mainstay of the Institute in its early and less prosperous days by furnishing the attraction to its rooms for the outside public, and through the proceeds of the regularly conducted exhibitions replenish the often scanty exchequer.

But even with the advantages these men thought they

possessed, how should we, to-day, think to accomplish any important results? The microscope furnished by Mr. Cole, the liberal amateur, was too costly a piece of mechanism to be even hoped for, except by few. Drying paper could not then be had, cheaply, at any natural history store. Indeed, no natural history store itself then existed. Horse-cars and steam railroads were not at the doors and street corners to take the collector swiftly to the woods and fields. Yet, patiently and surely, the work proceeded and collections were formed and new truths discovered.

To-day five editions of Asa Gray's Manual of Botany are broadcast over the land and countless variations, by his publishers, of Dr. Gray's other works are with it. Alphonso Wood has scarcely fewer followers, while the publications from innumerable other authors bring up the rear. Works on local floras are abundant. A good compound microscope can be had by almost any thrifty botanical student, and an excellent magnifying glass can at least be owned by all. Drying paper is on sale, as are also regulation size herbarium sheets and genus covers, in almost every city. Herbaria for consultation are everywhere accessible. We can run off in the cars, collect our box of plants, and be back to dinner, or, to Boston or Cambridge for consultation and exchange of ideas as quickly. In fact, we live in an age of such unheard-of advantages and luxury that, doubtless, we do not appreciate our privileges and have not half respect enough for the botanists of fifty years ago. The change is none the less marked to the student of vegetable physiology than to the collector of plants. Charles Darwin has come upon the scene and left it again, but left behind him an impression never to be effaced; he has revolutionized botanical study in many of its branches as much as he has that of zoölogy.

Gray has given us in the text-book of structural botany an almost perfect work, while translations of Sachs' great volume are in most libraries, and, besides, almost every mail brings to our table magazines devoted specially to botanical research, filled with the latest information from every quarter of the globe. In short, the study of botany from being looked upon as merely including the collecting and naming of plants, has been shown to be of a widely different nature in its highest aims; the study of the life-history of the individual and its relations to other forms. No longer do we draw an impassable line between the flowering plants and cryptogams; recent study proves that no such line exists. Instead of a mass of disconnected members we are taught to see a graduated line reaching from the humblest one-celled alga to the loftiest and most highly developed monarch of the forest.

And what then are the visible results in Essex County of this fifty years of labor?

The nucleus of the herbarium begun by Oakes and Nichols has grown into a collection including some 4,000 sheets of mounted plants and 200 wood specimens, representing nearly 1,700 species of plants, native or naturalized in Essex County, besides a reference collection of about 10,000 specimens from all parts of the world, all of which is now neatly arranged and properly cared for by the Peabody Academy of Science, at whose rooms it is open for free consultation by any botanist in the county. With this collection are the latest botanical reference books and microscopes for the use of students. Lectures and instruction in botany have formed part of the regular work of the Academy, where classes have regularly been conducted for several years. At the evening meetings of the Essex Institute many papers of value on this subject have been presented, while the influence of the two hun-

dred field meetings, which the Institute has held in all parts of the county, cannot even be approximated. The last important work in this direction was the Catalogue of the Flora of Essex County, a volume of two hundred pages, published by the Institute, in 1880.

Many museums, societies and clubs have sprung up throughout the county, and we frequently see in the local press accounts of the meetings of the "West Newbury Natural History Club," the "Cape Ann Scientific Association," the "Boxford Natural History Club," or those of similar organizations in Lynn, Georgetown, Amesbury, Marblehead and elsewhere. Many of these societies, as well as some of our educational institutions, possess valuable herbaria, and in several instances lists of the floras of the towns have been published. Of private collections it is impossible to speak. Their number is legion; many are confined to special groups, as trees, ferns, grasses, mosses, sea-weeds, etc. Some are more general in character, and many are both extensive and valuable.

We could extend this enumeration to many pages, but the brief outline here given must suffice to indicate these visible results.

Of the influence exerted upon the people, as a whole, and of the increase of students on these subjects it is more difficult to speak accurately.

Fifty years ago, William Oakes, searching on hands and knees for half an hour, to obtain a few capsules of a rare moss, was thought, by a worthy country woman who had watched his movements, to be a harmless insane person, and, in simple kindheartedness, she took him a slice of bread and butter. It is doubtful if such a thing could happen now, although it is not unusual for the botanical collector to be curiously questioned as to the commodity he has on sale in the green box, or to be addressed from

the second story window of some house at which he may have called for a drink of water after a dusty walk, being mistaken for a marauding tramp.

There is, however, no doubt that the general information of the people of Essex County, on the subject of botany, has vastly increased. The importance of the relations of certain insects to flowers is now so generally known that it would hardly be possible to find a community so stupidly ignorant as to be jealous of a neighbor's honey bees and almost drive him from the town in consequence, and this did actually happen in Essex County thirty years ago.

The distribution of useful scientific information through the county, and agricultural papers, is now so widely felt, and scientific lectures are so numerous, even in the smaller towns, that notions and superstitions, born of isolation and seclusion, are vanishing as mists before the morning sun. No longer do the former utterances of the lecturer or the writings of the essayist satisfy the growing demand. Mere accounts of habits and classification are still satisfactory to a juvenile audience, but for the maturer mind a deeper and more philosophical theme is required. Scientific books are more read and hence are more extensively purchased by the libraries. The benefits are twofold. Superstition is banished, and observation and rational thought encouraged.

This institution cannot, of course, be credited with all this change and improvement. Other forces have been steadily at work. The labors of our ancient and most excellent Essex Agricultural Society and its farmers' institutes, are an important factor not to be overlooked. The press and the pulpit have grown and developed immeasurably also, and have had their powerful influences brought to bear in the right direction, and natural

history has been introduced as a regular study in our higher grades of schools. Yet this institution has done a lion's share. Beginning before others, it has been as the leaven for the whole lump, preparing the people for all truth and wisdom. It has encouraged those who needed encouragement and offered facilities to those ready to work. Through its publications it has furnished the medium for the expression of ideas and the presentation of the results of scientific investigations, and it has sustained, at home and abroad, a reputation for Essex County as a scientific and intellectual centre. It is an honorable record, and this institution may well be proud of the result of its fifty years of labor. And in connection with this work the names of Cutler, Oakes, Pickering, Osgood, Russell and many other botanists will always be remembered with gratitude. They helped each other, and though all have passed away the result of their work will be a help to every future botanist who shall collect or study in Essex County.

Nor can I close without expressing my personal indebtedness to my old and honored friend, our president. To his belief in the necessity of encouraging the young student is in a great measure due the perpetuation of the institution he helped so ably to begin. He has ever believed that young laborers and new men must be engrafted on the old stock. I feel for myself as I know it has been with others, that what I have enjoyed of botany, of natural history generally, of museum work, is due to the encouragement given and the trust placed in me by him when I was but a boy, and if I have added the least of value to the work of those who have preceded me, it is the result of the stimulus coming of such encouragement and trust.

